Chapter Fourteen: Grad School Applications

Preparing and submitting a successful graduate school application is an integral part of your admission to a graduate school in the sciences/engineering. It can be stressful! However, armed with a few practical tips and helpful hints, not only can you prepare an impressive application, but you can gain confidence that it will help usher you into a successful career in science/engineering.

First Steps Toward a Successful Application:

1. Do your research on various programs, what they have to offer and what they look for in prospective students. Ask for advice from mentors, graduate students, and other professionals in the field. Check out websites through entering names of school, or try http://www.gradschools.com. Visit each program's website and contact the program director, faculty members and administrators to ask questions.
2. Consider a variety of facts in narrowing your choices of schools to which to apply:
    - Your research interests versus projects available and environment
    - Quality of mentors and resources available
    - Requirements for admission
    - Environment for students (Ask current graduate students. Programs should help you contact their students. If they don't want you to talk to their students, do you really want to go there?)
    - Location and quality of life issues, cost of living relative to stipend, sources of financial aid, housing (May need to consider family and relationships)

All good US Ph.D. programs in the sciences and engineering will provide you with a stipend/salary. You contribute to the baseline of knowledge while you gain your advanced education. Most Ph.D. students without children or spouses to support can live on the stipend/salary paid by their schools. Low interest loans are available. NIH *(http://www.nih.gov)* has established loan repayment programs for those with terminal degrees who conduct research. Some fellowship programs provide generous stipends for Ph.D. students *(http://www.nsf.gov)* and some graduate schools even provide additional salary to graduate students who are awarded nationally competitive fellowships.

3. Select between 4 and 12 schools to which to apply. Include a variety of schools, including those to which you feel certain you will be accepted and some that you are not sure will accept you. American educated students are in greater demand than you might imagine.
4. Acquire applications from websites or by mail. Request application fee waivers, if you need to do so. Many programs waive fees for on-line applications.
5. Create a file for each application. (Paper or computer files work, but realize that you may receive some paper communication from some schools). Include a spreadsheet with deadlines and requirements and check it off as you submit your applications.
6. Get a copy of your transcript for your own use.
7. Prepare an outline of your accomplishments and a draft of your personal statement and research experience, including your skills, work experience, and the obstacles you might have overcome to get an education or in life.
8. Take the GRE early enough to ensure that you can re-take it if necessary.
9. Meet with a trusted faculty member who can help you evaluate your progress and give you advice on your strengths, sometimes point out your weaknesses.
10. Request letters of recommendation from people who can evaluate your suitability for graduate study. If you have done research or work related even vaguely to your field of study, get at least one reference from your mentor or supervisor. Multiple references from people who were mentors are even better. If you have not become acquainted with professors in advanced courses, do it now! Letters from a teacher in a 300 student organic class mean very little, unless the teacher knows you well. Many graduate schools outline the characteristics they want recommenders to address in their letters, which you can provide. Give those writing your letters outlines of your accomplishments. Provide information on deadlines, stamped addressed envelopes or information on how to submit letters electronically.

Graduate School Application Pathway

1. Applicant obtains application (paper or web-based)
2. Applicant completes application and requests all materials be sent
3. Clerk begins a file that a program director or administrator may review

4. Applicant follows-up with the program to ensure that all components have been received. This is your responsibility. Ask if there is any additional information the program would find helpful.
5. Depending on the system, the file will go to a specific program or members of the Graduate School Admissions Committee. Files will usually be reviewed by several faculty or committee members. Additional information may be requested and the applicant will either be rejected, deferred or invited for an interview.
6. Applicant will be contacted to arrange interview (may be over the phone).
7. Interview will be held, generally with several other candidates.
8. Applicant will be ranked by interviewers.
9. Committee will meet to discuss candidates and make a recommendation to accept, defer or reject the applicant.
10. The evaluations will go to the Graduate School Admissions committee that will review the applications and recommendations and make the final decision regarding acceptance.
11. Clerk will validate all transcripts and letters of recommendation.
12. Clerk will send letter of acceptance or contact the applicant by phone.
13. Applicant responds and discusses any pertinent issues.
14. Applicant decides whether to accept the offer and notifies all schools where accepted of the decision immediately. There are always alternates who want the spot you didn't accept. Most US grad schools adhere to an April 15th target by which to finalize decisions, but if you decide sooner than that, please let everyone know.

Graduate School Application Components:

1. **Application forms:** Specific forms are filled out for each school to which you apply. They are often submitted electronically (check out the program's website). The application form generally includes a personal statement of goals and preparation for graduate study.
2. **Transcripts:** You will need to submit an official transcript from any college or university from which you have received college course credit.
3. **Letters of Recommendation:** These are a critical part of your application. Be sure to choose individuals who are acquainted with your potential, abilities and accomplishments, who have known you long enough to write with authority, who are familiar with your educational and ca-

reer goals, and who will write favorably about the skills and talents you possess that make you a good candidate for graduate school. Prepare a list of accomplishments that you can send each recommender and a list of the graduate schools and their deadlines for application. Also include a stamped envelope addressed to the graduate program, unless the letter is to be submitted online. If it is an on-line submission, send the directions for submission.

4. **GRE Scores:** Scores from the Graduate Record Examination are required by most graduate schools. Most schools require the general GRE, some require the general GRE and a subject GRE in a field related to the proposed field of study. See chapter two for a more extensive overview of preparing for doing your best on the GRE.

Writing A Personal Statement:

The personal statement is your chance to help reviewers get to know and understand who you are. It should reflect your experience and character.

1. You should include your motivation for doing science/engineering, your areas of interest (mention faculty members by name), your goals, and your preparation for graduate school. Write about your research /work experience and your accomplishments.
2. Describe your advanced coursework. Explain any science/engineering grades that are below a B. What have you done to insure that you learned the material covered in courses for which you made grades below a B? Did you make an A or B in a more advanced course? Did you do independent reading or a project that strengthened your background?
3. Discuss other activities that are relevant, and show your independence and sense of responsibility. However, do not include a wide range of community service activities and club involvements. Only include those that are relevant to the areas you want to pursue or show your ability to function independently or responsibly.
4. Be sure to adequately explain any unusual circumstances. *Do not raise any issues you don't want to discuss.* Your application may be strengthened by discussing obstacles you have overcome in life. There is a difference between an excuse for performance and an explanation of situations you have faced. Yes, it matters that you have funded your entire college education by working while you took classes. Dropping a class after you broke your leg is understandable. Dealing with family illness may be relevant to your motivation and academic history. But, be

cautious about mentioning issues you don't want to discuss. Once you raise an issue, it becomes a fair topic for questions.

5. Watch your adjectives—one word can change the whole impact. Words like "passion", "thrill", "committed" have their place in a personal statement, if your actions backup your claims. Make sure your description of yourself matches the facts. For example, don't say, "I have excelled academically" when your GPA is a 3.0. (Yes, a student did say that, which related a lack of understanding of the standards of Ph.D. programs.)
6. Check your grammar and spelling and make sure to use active voice sentences (I completed…, I conducted…). Get help with grammar if you need it, but pay attention and learn from the input you receive. Don't just rely on someone else to fix your mistakes. Make sure it is clear what you have done, learned.
7. Have others (including faculty members) critique your personal statement.
8. Revise, but don't obsess over writing a perfect personal statement. Your goal is to write an essay that can be accurately understood. The essay should be your work, clarified by comments from others. A major reason they added the analytical writing component to the GRE is because so many people had so much help in writing their personal statements that graduate faculty were very disappointed in the discrepancy between writing on the essays and writing performance in graduate school.

Describing Research/Work Experience(s)

The description of your past research/work experience is a very important part of your application to graduate school and can help you on almost any application. Take the time to write a thorough and unambiguous description of your experience(s). If you have multiple real-life experiences, you may want to list them, but then focus on one that is the most relevant to the program to which you are applying or that shows your greatest level of achievement or independence. You may need to refer to notes or abstracts to refresh your memory.

1. What do graduate schools want?

- Concise (usually no more than one to two page) description
- Evidence that you understood the project. Include the significance of the work, the goals of the work and how your contribution related to the goal.

- What you learned, without philosophizing. Just explain what you did.
- Examples of techniques/procedures you used and your familiarity with them

For example: A description might start with, "As a consequence of my studies of gene expression during spermatogenesis, I have a better understanding of how to extract RNA from cells and conduct hybridization experiments, including *in situ* hydridization. I developed light microscopy skills and improved my knowledge of basic statistical analysis." Then expand the description to include more detail. The right details will earn you bonus points-the sizes of DNA fragments; the restriction sites; the sensitivity of an assay you develop, the type of computer language used in your program.

Results, including publications and acknowledgments, if any.

2. Practical Pointers for Describing Research/Work Experiences

1. Check your general statements for accuracy and add appropriate qualifiers.
2. Include an appropriate level of sophistication. Avoid elementary explanations (people know what a DNA double helix is) and define abbreviations, except extremely common ones. Pay attention to your audience and include details that illuminate the depth of your understanding of the project.
3. Avoid empty phrases that convey no information ("was changed").
4. Avoid negative words, ("failure", "inadequate", "disappointment").
5. Avoid overstating the case ("radical discovery", "revolutionary").
6. Emphasize the positives of your work, even if that was showing that a hypothesis was wrong or that a specific approach wouldn't work. Real science includes finding "dead-ends". You usually learn more when things don't work, than when they do.
7. Get updates from those with whom you worked. Did they follow-up on your project? Did your work enable others to make discoveries or accomplishments? Were your results or techniques used as the foundation for a grant or proposal?
8. Have others read your research description. Can they understand your points? Revise accordingly.

Impact of Research Descriptions

Your research/work description can make or break your graduate school application. Having excellent grades won't matter much to a reviewer if you write three sentences about your research/work experience. Don't laugh – I've seen students who submitted no more than a few nebulous lines about their research. Even if your mentor has great things to say about your work, you need to convey what you did, what you learned, and what it meant.

I know of cases when a student's grades were less than stellar and GRE scores were not strong, but whose research description was so strong and reflected such interest and commitment that faculty took the time to read letters of recommendation carefully. One such student was invited for an interview and wowed everyone. Her knowledge and enthusiasm were evident. The program decided to give her a chance. Once she was taking courses in the field she loved, her grades improved, her research was outstanding, she received a national fellowship, and became a leader in her Ph.D. program. She was not only selected as her program's most outstanding Ph.D. student, she received the award as the most outstanding Ph.D, student in the entire graduate school of nearly 500 students. Without a strong research description, the grad school that became the home in which she could develop so completely might not have given her the chance to "sell herself".